```
$%^STN;HighlightOn= ***;HighlightOff=***  ;

Connecting via Winsock to STN



Welcome to STN International!  Enter x:X

LOGINID:SSSPTA1653RAW

PASSWORD:
TERMINAL (ENTER 1, 2, 3, OR ?):2

* * * * * * * * * *   Welcome to STN International   * * * * * * * * * *

 NEWS  1         Web Page URLs for STN Seminar Schedule - N. America
 NEWS  2         "Ask CAS" for self-help around the clock
 NEWS  3  FEB 25 CA/CAPLUS - Russian Agency for Patents and Trademarks
                 (ROSPATENT) added to list of core patent offices covered
 NEWS  4  FEB 28 PATDPAFULL - New display fields provide for legal status
                 data from INPADOC
 NEWS  5  FEB 28 BABS - Current-awareness alerts (SDIs) available
 NEWS  6  FEB 28 MEDLINE/LMEDLINE reloaded
 NEWS  7  MAR 02 GBFULL: New full-text patent database on STN
 NEWS  8  MAR 03 REGISTRY/ZREGISTRY - Sequence annotations enhanced
 NEWS  9  MAR 03 MEDLINE file segment of TOXCENTER reloaded
 NEWS 10  MAR 22 KOREAPAT now updated monthly; patent information enhanced
 NEWS 11  MAR 22 Original IDE display format returns to REGISTRY/ZREGISTRY
 NEWS 12  MAR 22 PATDPASPC - New patent database available
 NEWS 13  MAR 22 REGISTRY/ZREGISTRY enhanced with experimental property tags
 NEWS 14  APR 04 EPFULL enhanced with additional patent information and new
                 fields
 NEWS 15  APR 04 EMBASE - Database reloaded and enhanced

 NEWS EXPRESS  JANUARY 10 CURRENT WINDOWS VERSION IS V7.01a, CURRENT
               MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
               AND CURRENT DISCOVER FILE IS DATED 10 JANUARY 2005

 NEWS HOURS    STN Operating Hours Plus Help Desk Availability
 NEWS INTER    General Internet Information
 NEWS LOGIN    Welcome Banner and News Items
 NEWS PHONE    Direct Dial and Telecommunication Network Access to STN
 NEWS WWW      CAS World Wide Web Site (general information)

Enter NEWS followed by the item number or name to see news on that
specific topic.

  All use of STN is subject to the provisions of the STN Customer
  agreement.  Please note that this agreement limits use to scientific
  research.  Use for software development or design or implementation
  of commercial gateways or other similar uses is prohibited and may
  result in loss of user privileges and other penalties.

  * * * * * * * * * * * * * * STN Columbus * * * * * * * * * * * * * * * *

FILE 'HOME' ENTERED AT 12:47:43 ON 14 APR 2005

=> FIL STNGUIDE
COST IN U.S. DOLLARS                              SINCE FILE     TOTAL
                                                       ENTRY   SESSION
FULL ESTIMATED COST                                     0.21      0.21

FILE 'STNGUIDE' ENTERED AT 12:47:55 ON 14 APR 2005
USE IS SUBJECT TO THE TERMS OF YOUR CUSTOMER AGREEMENT
COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY, JAPAN SCIENCE
AND TECHNOLOGY CORPORATION, AND FACHINFORMATIONSZENTRUM KARLSRUHE

FILE CONTAINS CURRENT INFORMATION.
LAST RELOADED: Apr  8, 2005 (20050408/UP).

=> FIL HOME
COST IN U.S. DOLLARS                              SINCE FILE     TOTAL
                                                       ENTRY   SESSION
FULL ESTIMATED COST                                     0.06      0.27

FILE 'HOME' ENTERED AT 12:47:59 ON 14 APR 2005

=> index biosci
FILE 'DRUGMONOG' ACCESS NOT AUTHORIZED
COST IN U.S. DOLLARS                              SINCE FILE     TOTAL
                                                       ENTRY   SESSION
FULL ESTIMATED COST                                     0.21      0.48

INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, ANTE, AQUALINE,
       AQUASCI, BIOBUSINESS, BIOCOMMERCE, BIOENG, BIOSIS, BIOTECHABS, BIOTECHDS,
       BIOTECHNO, CABA, CANCERLIT, CAPLUS, CEABA-VTB, CEN, CIN, CONFSCI, CROPB,
       CROPU, DDFB, DDFU, DGENE, DISSABS, ...' ENTERED AT 12:48:10 ON 14 APR
2005

75 FILES IN THE FILE LIST IN STNINDEX

Enter SET DETAIL ON to see search term postings or to view
search error messages that display as 0* with SET DETAIL OFF.

=> metal (w) (remov? or remediation or recover?)
METAL IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s metal (w) (remov? or remediation or recover?)
         89   FILE AGRICOLA
         40   FILE ANABSTR
        143   FILE ANTE
        440   FILE AQUALINE
        134   FILE AQUASCI
        178   FILE BIOBUSINESS
         26   FILE BIOCOMMERCE
        255   FILE BIOENG
        936   FILE BIOSIS
       1978   FILE BIOTECHABS
       1978   FILE BIOTECHDS
```

```
     662   FILE BIOTECHNO
     334   FILE CABA
       3   FILE CANCERLIT
   19959   FILE CAPLUS
    2835   FILE CEABA-VTB
       6   FILE CEN
     427   FILE CIN
     116   FILE CONFSCI
       1   FILE CROPB
       1   FILE CROPU
  26 FILES SEARCHED...
     121   FILE DGENE
     188   FILE DISSABS
       6   FILE EMBAL
    1042   FILE EMBASE
     431   FILE ESBIOBASE
      72   FILE FEDRIP
      13   FILE FROSTI
      40   FILE FSTA
       2   FILE GENBANK
      38   FILE HEALSAFE
    1311   FILE IFIPAT
     270   FILE JICST-EPLUS
     200   FILE LIFESCI
     283   FILE MEDLINE
      23   FILE NIOSHTIC
     447   FILE NTIS
  52 FILES SEARCHED...
      17   FILE OCEAN
     966   FILE PASCAL
    1854   FILE PROMT
      23   FILE RDISCLOSURE
    1515   FILE SCISEARCH
    8056   FILE TOXCENTER
    6590   FILE USPATFULL
     388   FILE USPAT2
  69 FILES SEARCHED...
     546   FILE WATER
    3439   FILE WPIDS
       7   FILE WPIFV
    3439   FILE WPINDEX

  49 FILES HAVE ONE OR MORE ANSWERS,   75 FILES SEARCHED IN STNINDEX

L1   QUE METAL (W) (REMOV? OR REMEDIATION OR RECOVER?)

=> s l1 (p) metallothionein
      0*   FILE ADISNEWS
      1    FILE AGRICOLA
      0*   FILE ANTE
      2*   FILE AQUALINE
      1    FILE AQUASCI
      1    FILE BIOBUSINESS
      0*   FILE BIOCOMMERCE
      5*   FILE BIOENG
      7    FILE BIOSIS
     50*   FILE BIOTECHABS
     50*   FILE BIOTECHDS
      9*   FILE BIOTECHNO
      2    FILE CABA
     21    FILE CAPLUS
      9*   FILE CEABA-VTB
      0*   FILE CIN
     37    FILE DGENE
      1    FILE DISSABS
      7    FILE EMBASE
      3*   FILE ESBIOBASE
  34 FILES SEARCHED...
      0*   FILE FEDRIP
      0*   FILE FOMAD
      0*   FILE FOREGE
      0*   FILE FROSTI
      0*   FILE FSTA
      1    FILE IFIPAT
      0*   FILE KOSMET
      5    FILE LIFESCI
      0*   FILE MEDICONF
      7    FILE MEDLINE
      1    FILE NIOSHTIC
      4*   FILE NTIS
      0*   FILE NUTRACEUT
      6*   FILE PASCAL
      0*   FILE PHARMAML
  61 FILES SEARCHED...
      9    FILE SCISEARCH
     21    FILE TOXCENTER
      4    FILE USPATFULL
      1    FILE USPAT2
      2*   FILE WATER
  73 FILES SEARCHED...

  27 FILES HAVE ONE OR MORE ANSWERS,   75 FILES SEARCHED IN STNINDEX

L2   QUE L1 (P) METALLOTHIONEIN

=> s l2 (p) ((brine (w) shrimp) or artemia)
      0*   FILE ADISNEWS
      0*   FILE ANTE
      0*   FILE AQUALINE
      0*   FILE BIOCOMMERCE
      0*   FILE BIOENG
      0*   FILE BIOTECHABS
      0*   FILE BIOTECHDS
      0*   FILE BIOTECHNO
      0*   FILE CEABA-VTB
      0*   FILE CIN
  25 FILES SEARCHED...
     10    FILE DGENE
      0*   FILE ESBIOBASE
      0*   FILE FEDRIP
      0*   FILE FOMAD
      0*   FILE FOREGE
      0*   FILE FROSTI
      0*   FILE FSTA
```

```
        0*  FILE KOSMET
        0*  FILE MEDICONF
        0*  FILE NTIS
  52 FILES SEARCHED...
        0*  FILE NUTRACEUT
        0*  FILE PASCAL
        0*  FILE PHARMAML
        0*  FILE WATER
  72 FILES SEARCHED...

   1 FILES HAVE ONE OR MORE ANSWERS,   75 FILES SEARCHED IN STNINDEX

L3   QUE L2 (P) ((BRINE (W) SHRIMP) OR ARTEMIA)

=> s 12
        0*  FILE ADISNEWS
        1   FILE AGRICOLA
        0*  FILE ANTE
        2*  FILE AQUALINE
        1   FILE AQUASCI
        1   FILE BIOBUSINESS
        0*  FILE BIOCOMMERCE
        5*  FILE BIOENG
        7   FILE BIOSIS
       50*  FILE BIOTECHABS
       50*  FILE BIOTECHDS
        9*  FILE BIOTECHNO
        2   FILE CABA
       21   FILE CAPLUS
        9*  FILE CEABA-VTB
        0*  FILE CIN
       37   FILE DGENE
        1   FILE DISSABS
        7   FILE EMBASE
        3*  FILE ESBIOBASE
        0*  FILE FEDRIP
        0*  FILE FOMAD
  36 FILES SEARCHED...
        0*  FILE FOREGE
        0*  FILE FROSTI
        0*  FILE FSTA
        1   FILE IFIPAT
        0*  FILE KOSMET
        5   FILE LIFESCI
        0*  FILE MEDICONF
        7   FILE MEDLINE
        1   FILE NIOSHTIC
        4*  FILE NTIS
        0*  FILE NUTRACEUT
        6*  FILE PASCAL
        0*  FILE PHARMAML
        9   FILE SCISEARCH
       21   FILE TOXCENTER
        4   FILE USPATFULL
  68 FILES SEARCHED...
        1   FILE USPAT2
        2*  FILE WATER

  27 FILES HAVE ONE OR MORE ANSWERS,   75 FILES SEARCHED IN STNINDEX

L4   QUE L2

=> file hits
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                         ENTRY    SESSION
FULL ESTIMATED COST                                       5.31       5.79

FILE 'BIOTECHABS' ACCESS NOT AUTHORIZED

FILE 'BIOTECHDS' ENTERED AT 12:53:22 ON 14 APR 2005
COPYRIGHT (C) 2005 THE THOMSON CORPORATION

FILE 'DGENE' ENTERED AT 12:53:22 ON 14 APR 2005
COPYRIGHT (C) 2005 THE THOMSON CORPORATION

FILE 'CAPLUS' ENTERED AT 12:53:22 ON 14 APR 2005
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'TOXCENTER' ENTERED AT 12:53:22 ON 14 APR 2005
COPYRIGHT (C) 2005 ACS

FILE 'SCISEARCH' ENTERED AT 12:53:22 ON 14 APR 2005
Copyright (c) 2005 The Thomson Corporation

FILE 'BIOTECHNO' ENTERED AT 12:53:22 ON 14 APR 2005
COPYRIGHT (C) 2005 Elsevier Science B.V., Amsterdam. All rights reserved.

FILE 'CEABA-VTB' ENTERED AT 12:53:22 ON 14 APR 2005
COPYRIGHT (c) 2005 DECHEMA eV

FILE 'BIOSIS' ENTERED AT 12:53:22 ON 14 APR 2005
Copyright (c) 2005 The Thomson Corporation

FILE 'EMBASE' ENTERED AT 12:53:22 ON 14 APR 2005
COPYRIGHT (C) 2005 Elsevier Inc. All rights reserved.

FILE 'MEDLINE' ENTERED AT 12:53:22 ON 14 APR 2005

FILE 'PASCAL' ENTERED AT 12:53:22 ON 14 APR 2005
Any reproduction or dissemination in part or in full,
by means of any process and on any support whatsoever
is prohibited without the prior written agreement of INIST-CNRS.
COPYRIGHT (C) 2005 INIST-CNRS. All rights reserved.

FILE 'LIFESCI' ENTERED AT 12:53:22 ON 14 APR 2005
COPYRIGHT (C) 2005 Cambridge Scientific Abstracts (CSA)

FILE 'BIOENG' ENTERED AT 12:53:22 ON 14 APR 2005
COPYRIGHT (C) 2005 Cambridge Scientific Abstracts (CSA)

FILE 'USPATFULL' ENTERED AT 12:53:22 ON 14 APR 2005
CA INDEXING COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)
```

```
FILE 'NTIS' ENTERED AT 12:53:22 ON 14 APR 2005
Compiled and distributed by the NTIS, U.S. Department of Commerce.
It contains copyrighted material.
All rights reserved. (2005)

FILE 'ESBIOBASE' ENTERED AT 12:53:22 ON 14 APR 2005
COPYRIGHT (C) 2005 Elsevier Science B.V., Amsterdam. All rights reserved.

FILE 'CABA' ENTERED AT 12:53:22 ON 14 APR 2005
COPYRIGHT (C) 2005 CAB INTERNATIONAL (CABI)

FILE 'AQUALINE' ENTERED AT 12:53:22 ON 14 APR 2005
COPYRIGHT (C) 2005 Cambridge Scientific Abstracts (CSA)

FILE 'WATER' ENTERED AT 12:53:22 ON 14 APR 2005
COPYRIGHT (C) 2005 Cambridge Scientific Abstracts (CSA)

FILE 'AGRICOLA' ENTERED AT 12:53:22 ON 14 APR 2005

FILE 'AQUASCI' ENTERED AT 12:53:22 ON 14 APR 2005
COPYRIGHT 2005 FAO (On behalf of the ASFA Advisory Board). All rights reserved.

FILE 'BIOBUSINESS' ENTERED AT 12:53:22 ON 14 APR 2005
Copyright (c) 1998 The Thomson Corporation.

FILE 'DISSABS' ENTERED AT 12:53:22 ON 14 APR 2005
COPYRIGHT (C) 2005 ProQuest Information and Learning Company; All Rights
Reserved.

FILE 'IFIPAT' ENTERED AT 12:53:22 ON 14 APR 2005
COPYRIGHT (C) 2005 IFI CLAIMS(R) Patent Services (IFI)

FILE 'NIOSHTIC' ENTERED AT 12:53:22 ON 14 APR 2005
COPYRIGHT (C) 2005 U.S. Secretary of Commerce on Behalf of the U.S. Government

FILE 'USPAT2' ENTERED AT 12:53:22 ON 14 APR 2005
CA INDEXING COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)

=> s 14
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L1 (P) METALLOTH'
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L1 (P) METALLOTH'
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L1 (P) METALLOTH'
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L1 (P) METALLOTH'
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L1 (P) METALLOTH'
  14 FILES SEARCHED...
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L1 (P) METALLOTH'
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L1 (P) METALLOTH'
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L1 (P) METALLOTH'
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L1 (P) METALLOTH'
L5          217 L4

=> dup rem 15
DUPLICATE IS NOT AVAILABLE IN 'DGENE'.
ANSWERS FROM THESE FILES WILL BE CONSIDERED UNIQUE
PROCESSING COMPLETED FOR L5
L6            128 DUP REM L5 (89 DUPLICATES REMOVED)

=> s 16 and (device or membrane)
<------User Break------>

SEARCH ENDED BY USER

=> s 16 and (device or membrane or filter)
  17 FILES SEARCHED...
L7            14 L6 AND (DEVICE OR MEMBRANE OR FILTER)

=> d 17 bib ab 1-14

L7    ANSWER 1 OF 14  BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN
AN    2005-00370  BIOTECHDS
TI    Phytoremediation - A novel and promising approach for environmental
      clean-up;
         pollutant degradation and   ***metal***    ***recovery***   via plant
      suspension culture for use in bioremediation
AU    SURESH B; RAVISHANKAR GA
CS    Cent Food Technol Res Inst
LO    Ravishankar GA, Cent Food Technol Res Inst, Plant Cell Biotechnol Dept,
      Mysore 570020, Karnataka, India
SO    CRITICAL REVIEWS IN BIOTECHNOLOGY; (2004) 24, 2-3, 97-124    ISSN:
      0738-8551
DT    Journal
LA    English
AB    AUTHOR ABSTRACT - Phytoremediation is an eco friendly approach for
      remediation of contaminated soil and water using plants. Phytoremediation
      is comprised of two components, one by the root colonizing microbes and
      the other by plants themselves, which degrade the toxic compounds to
      further non-toxic metabolites. Various compounds, viz. organic compounds,
      xenobiotics, pesticides and heavy metals, are among the contaminants that
      can be effectively remediated by plants. Plant cell cultures, hairy roots
      and algae have been studied for their ability to degrade a number of
      contaminants. They exhibit various enzymatic activities for degradation
      of xenobiotics, viz. dehalogenation, denitrification leading to breakdown
      of complex compounds to simple and non-toxic products. Plants and algae
      also have the ability to hyper accumulate various heavy metals by the
      action of phytochelatins and metallothioneins forming complexes with
      heavy metals and translocate them into vacuoles. Molecular cloning and
      expression of heavy metal accumulator genes and xenobiotic degrading
      enzyme coding genes resulted in enhanced remediation rates, which will be
      helpful in making the process for large-scale application to remediate
      vast areas of contaminated soils. A few companies worldwide are also
      working on this aspect of bioremediation, mainly by transgenic plants to
      replace expensive physical or chemical remediation techniques. Selection
      and testing multiple hyperaccumulator plants, protein engineering of
      phytochelatin and   ***membrane***   transporter genes and their
```

expression would enhance the rate of phytoremediation, making this process a successful one for bioremediation of environmental contamination. Recent years have seen major investments in the RandD, which have also resulted in competition of filing patents by several companies for economic gains. The details of science and technology related to phytoremediation have been discussed with a focus on future trends and prospects of global relevance.(28 pages)

L7 ANSWER 2 OF 14 BIOTECHDS on STN
AN 2002-17820 BIOTECHDS
TI A recombinant streptavidin- ***metallothionein*** chimeric protein is useful to add or remove heavy metal ions into biotin-containing biological material, particularly for tumor imaging, radiotherapy, and DNA or protein labeling;
vector-mediated gene transfer and expression in host cell for cancer monitoring
AU SANO T; GLAZER A N; CANTOR C R
PA UNIV CALIFORNIA
PI US 6391590 21 May 2002
AI US 1991-780717 21 Oct 1991
PRAI US 1991-780717 21 Oct 1991
DT Patent
LA English
OS WPI: 2002-488386 [52]
AB DERWENT ABSTRACT:
NOVELTY - A recombinant bifunctional streptavidin- ***metallothionein*** chimeric (BSMC) protein, produced by introducing into a host cell nucleic acid encoding a bifunctional fusion protein having a streptavidin and a ***metallothionein*** moiety, and incubating the cell to express the fusion protein, is new.

DETAILED DESCRIPTION - The recombinant BSMC protein produced by a method comprising; (a) introducing into a host cell a nucleic acid encoding a bifunctional fusion protein comprising a streptavidin and a ***metallothionein*** moiety, where the streptavidin moiety consists of residues 16-133 of mature streptavidin which is the 118 amino acid sequence fully defined in the specification (I) (b) incubating the cell under conditions sufficient to express the fusion protein, and (c) isolating the fusion protein INDEPENDENT CLAIMS are also included for the following: (1) making a recombinant BSMC protein made by the method described in the main claim; (2) an expression vector comprising a truncated streptavidin gene encoding a streptavidin moiety which consists of residues 16-133 (sequence I) of mature streptavidin; (3) a recombinant BSMC protein comprising a streptavidin moiety consisting of residues 16-133 (I) of mature streptavidin; (4) a chimeric protein comprising a functional streptavidin moiety consisting of residues 16-133 (I) of mature streptavidin; (5) a functional streptavidin moiety consisting of residues 16-133 (I) of mature streptavidin.

WIDER DISCLOSURE - Also disclosed as new are: (1) incorporation of the meta-containing streptavidin- ***metallothionein*** chimeric protein into biological materials containing unhindered biotin; (2) a method of introducing heavy metal ions into the tissue, removing the heavy metal ions from the tissue or labelling the tissue with heavy metal ions; and (3) use of streptavidin- ***metallothionein*** chimeric protein for imaging of tumors, radiotherapeutics, labellinbg of biological molecules present at very low levels and for simulteneous multi-mass labelling of short DNA molecules allowing determination of a number of DNA sequences.

BIOTECHNOLOGY - Preferred Method: The isolation step comprises a renaturation step in the presence of a heavy metal ion which binds the ***metallothionein*** moiety. The fusion protein preferably additionally comprises a peptide between the streptavidin and ***metallothionein*** moieties. The incubation conditions are sufficiently minimal to substantially reduce proteolysis of the expressed protein and isolation is carried out in the presence of proteinase inhibitor(s). Isolation comprises 2-iminobiotin affinity chromatography performed at least in part at pH 10.5. Preferred Expression Vector: The truncated streptavidin gene is under control of a T7 promoter and is joined to a polylinker comprising a cloning site. The vector preferably comprises a gene fusion of the truncated streptavidin gene with a target protein gene, preferably one encoding ***metallothionein*** .

USE - The chimeric protein is used to incorporate heavy metal ions into biological materials containing biotin, or to remove heavy metal ions from the biological material. Specific uses include loading cancerous tissue with heavy metal ions for imaging of tumor cells and radiotherapy, and labeling DNA and proteins for detection on gels or blots by surface scanning mass spectrometry (disclosed).

EXAMPLE - Lysogen BL21 (DE3) (pLysE) transformed with the expression vector pTSAMT-2 was grown at 37degreesC with shaking in M9 minimal medium supplemented with 1mM MgSO4, 0.2% D-glucose, 1.5 mumicroM thiamine, 0.5% Casamino acids (Difco), 2 microg/ml biotin, 150 microg/ml ampicillin and 25 microg/ml chloramphenicol. When culture absorbance at 600 nm reached about 0.6, 100mM aqueous solution of isopropyl beta-D-thiogalactopyranoside was added to a final concentration of 0.5mM to induce T7 RNA polymerase gene placed under lacUV5 promoter. After induction the cells were incubated at 37degreesC with shaking.% hours after induction the culture was centrifuged at 2900g for 10 minutes and the pellet resuspended in 10ml of 2mM phenylmethylsulfonyl fluoride (PMSF) to lyse the cells. PMSF, pepstatin A and leupeptin were added to final concentrations of 1mM, 1 microM and 1 microM respectively and the cell lysate then treated with 10 microg/ml DNase I and 10 microg/ml RNase A in the presence of 12mM MgSO4 at room temperature for 30 minutes followed by centrifugation at 39000g for 15 minutes. The precipitate was dissolved in 5ml of 6M guanidine hydrochloride, pH 1.5 / 10mM DTT, and dialyzed against the same solution to remove bound biotin. The dialysate was diluted with the same solution to a total volume of approximately 100ml, and then dialyzed against 0.2M ammonium acetate pH 6.0, 5mM CdCl2, 0.1mM EDTA, 1mM PMSF, 1microM peptstatin A, 1 microM leupeptin, 0.02% NaN3 left overnight without stirring, followed by several changes of the dialysis solution and dialysis with stirring. The dialysate was centrifuged at 39000g for 15 minutes and the supernatant briefly dialyzed against 10.M NaCl2, 50mM sodium carbonate, pH 10.5, 1mM PMSF, 1 microM pepstatin A, 1 microM leupeptin (buffer A). The dialysate was centrifuged as before and the supernatant adjusted to pH 10.5 with 10 M NaOH. The fraction was applied on a 2-iminobiotin agarose column equilibrated with buffer A, unbound proteins were washed from the column with buffer A and the bound protein eluted with 6M urea, 50mM ammonium acetate pH 4.0, 0.5mM CdCl2, 0.1mM EDTA, 1mM PMSF, 1 muM peptstatin A, 1 microM leupeptin. The eluted fraction was dialyzed against 0.2M ammonium acetate pH 7.0, , 0.5mM CdCl2, 0.1mM EDTA, 1mM PMSF, 1 microM peptstatin A, 1 muM leupeptin and then against 0.2M ammonium acetate pH 7.0. The dialysate was then filtered through a polyvinylidene difluoride ***filter*** , pore size 0.22 microm after centrifugation as before and the filtrate stored at 4degreesC. (9 pages)

L7 ANSWER 3 OF 14 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN
AN 2002-05059 BIOTECHDS
TI New bacterium that binds heavy metals, useful for decontamination of soil and effluent, expresses metal-binding protein at the cell surface;
plasmid pTnMTbeta1 expression in Escherichia coli for waste-water treatment and heavy ***metal*** ***recovery***
AU LORENZO PRIETO V; VALLS MATHEU M; ATRIAN VENTURA S
PA CONSEJO SUPERIOR INVESTIGACIONES CIENTIF; UNIV BARCELONA; FERNANDEZ HERRERO L A
PI WO 2001092471 6 Dec 2001
AI WO 2000-ES214 31 May 2000
PRAI ES 2000-1387 31 May 2000
DT Patent
LA Spanish
OS WPI: 2002-122060 [16]
AB DERWENT ABSTRACT:
NOVELTY - Bacteria (A) able to bind heavy metals (HM), are new. The bacteria are adapted to soil, are resistant to HM, and contain, at the cell surface, at least one protein or peptide (I) able to bind one or more HM.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following: (1) method for restoring soil contaminated with HM by treatment with a culture of (A); and (2) method for decontaminating effluent containing HM by treatment with (A), as living culture or dead biomass.

BIOTECHNOLOGY - Preferred Bacteria: The bacteria are transformed to express a ***metallothionein*** , especially MT-1 of mice. The sequence that encodes (I) is controlled by a constitutive or inducible promoter and (I) is anchored to the external ***membrane*** by an autotransporter system, specifically protease IgA of Neisseria gonorrhoeae. Preparation: The gene (mtb) for murine MT-1 is amplified (primer sequences given) from pMTP and the amplicon cloned into pPvHbeta to form pMTbeta-0. The XbaI and HindIII sites that flank mtb are converted to NotI sites by attachment of linkers and the 1.7 kbase NotI fragment cloned into the unique NotI site of pCNB1, so that mtb is under control of the Pm promoter to form pTnMTbeta1. This was used to transform Escherichia coli S-17-1lambdapir and the resulting cells conjugated with Ralstonia eutrophus CH34 so that the TnMTbeta1 mini-Tn5 element was incorporated into the chromosome of CH34, forming the strain MTB (CECT 5323). This strain expressed a modular protein comprising the pelB leader in phase with MT-1 and the beta-domain of the protease IgA of N. gonorrhoeae, also a short epitope tag for immunodetection. Expression of this protein is controlled by the Pm promoter and is induced by 3-methylbenzoate.

USE - (A) are used to remove HM contamination from soils and effluent streams.

ADVANTAGE - Expression of (I) at the cell surface increased ability of (A) to bind HM. Treatment with (A) is effective where toxic metals are present at low levels (where physicochemical methods are ineffective), e.g. for removing residual contamination from mechanically cleaned soil affected by dumping of mining wastes.

EXAMPLE - Ralstonia eutrophus MTB (CECT5323), containing the murine ***metallothionein*** -1 transgene under control of the 3-methylbenzoate (3MB)-inducible promoter Pm, was grown in presence of cadmium chloride and 3MB, then mixed with soil at 10 to the power 8 cells/g. The soil, containing cadmium at 150 micro-mole/kg (sufficient to inhibit growth of plants and to cause severe chlorosis) was used to grow Nicotiana bentamiana. With no bacteria added to the soil, mean plant weight (55 days after germination) was 0.53 g and chlorophyll content was 0.49 mg/g. When the soil contained MTB, the corresponding figures were 2.37 g and 1.41 mg/g, and when R. eutrophus CH34 (the parent of MTB) was used, they were 1.29 g and 0.81 mg/g. (50 pages)

L7 ANSWER 4 OF 14 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN
AN 1999-09662 BIOTECHDS
TI Hg2+ removal by genetically engineered Escherichia coli in a hollow fiber reactor;
expression of ***metallothionein*** -glutathione-transferase fusion protein to enable mercury ***metal*** ***recovery*** and groundwater decontamination
AU Chen S; Kim E; Shuler M L; *Wilson D B
CS Univ.Cornell
LO Institute for Comparative and Environmental Toxicology, Section of Biochemistry, Molecular and Cell Biology, Cornell University, Ithaca, New York, NY 14853, USA.
Email: dbw3@cornell.edu
SO Biotechnol.Prog.; (1998) 14, 5, 667-71
CODEN: BIPRET ISSN: 8756-7938
DT Journal
LA English
AB The accumulation of Hg2+ by Escherichia coli JM109 engineered to express an Hg2+ (MerT-MerP) transport system and a ***metallothionein*** -glutathione-transferase (EC-2.5.1.18) fusion protein (using plasmid pSUTP and plasmid pGPMT) at concentrations of between 0.2 and 4 mg/l in batch systems was characterized. The accumulation was selective for mercury and was not affected by changes in pH, ionic strength and the presence of common metal chelators or complexing agents. Bioaccumulation was rapid and followed Michaelis-Menton kinetics. A hollow fiber bioreactor with a surface area of 300 cm2 was used to retain the transformed cells. The bioreactor effectively reduced a 2 mg/l solution to 5 ug/l. A mathematical equation was derived that quantitatively described Hg2+ removal by the bioreactor and provided a basis for the optimization and extrapolation of the bioreactor. The recombinant E. coli and the bioreactor may be very useful in groundwater decontamination of waters contaminated with mercury. (13 ref)

L7 ANSWER 5 OF 14 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN
AN 1999-00662 BIOTECHDS
TI Removal of heavy metals from aq. media;
vector plasmid pMalP-mediated Neurospora crassa gene transfer, ***metallothionein*** and maltose binding protein fusion protein expression in Escherichia coli; heavy ***metal*** ***recovery***
AU Pazirandeh M; Campbell J R
PA U.S.Navy
LO Washington, DC, USA.
PI US 5824512 20 Oct 1998
AI US 1996-754431 22 Nov 1996
PRAI US 1996-754431 22 Nov 1996
DT Patent
LA English
OS WPI: 1998-582556 [49]
AB A new method for the removal of heavy metal contaminants from an aq.

medium involves providing recombinant bacteria transformed with a plasmid that expresses a ***metallothionein*** into the periplasmic space, inducing the bacteria to express the ***metallothionein*** , killing the bacteria, covalently attaching the resulting biomass to the surface of a solid support, contacting the surface with an aq. medium so that the ***metallothionein*** specifically binds at least one heavy metal, and removing the support from the aq. medium. Also claimed is a ***device*** consisting of the biomass attached to the support. The now ***device*** may be used for removing heavy metals, e.g. Cd, Hg, Cr, Pb and Zn from waste-water and sediments, and the support can be regenerated and re-used. The bacterium is preferably Escherichia coli, and the ***metallothionein*** is expressed as a fusion protein with a cell ***membrane*** protein, especially maltose binding protein. The plasmid is preferably plasmid pMalP containing a Neurospora crassa ***metallothionein*** gene, and the support is an alginate, acrylamide or glass. (14pp)

L7 ANSWER 6 OF 14 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN
AN 1990-13124 BIOTECHDS
TI Expression of a Neurospora crassa ***metallothionein*** and its variants in Escherichia coli;
protein engineering; potential application in heavy ***metal*** ***recovery***
AU Romeyer F M; Jacobs F A; Brousseau R
LO Biotechnology Research Institute, National Research Council Canada, Montreal, Quebec H4P 2R2, Canada.
SO Appl.Environ.Microbiol.; (1990) 56, 9, 2748-54
CODEN: AEMIDF
DT Journal
LA English
AB A Neurospora crassa ***metallothionein*** (NC) synthesis gene was cloned and expressed in Escherichia coli MC1061 in vector plasmid pING2 and plasmid UA7, both under the regulation of a Salmonella typhimurium arabinose operon. Upon induction with arabinose, vector plasmid pING2-NC expressed a refractile body-localized AraB'::NC fusion protein (mol.wt. 21,000) and vector plasmid pUA7-NC expressed an outer ***membrane*** -anchored Lpp::NC fusion protein (mol.wt. 5,300). E. coli cells expressing the fusion proteins accumulated cadmium and copper 2.3-fold and 11-fold, respectively, compared with nonexpressing cells. To generate novel forms of metal-binding peptides, a set of specific mutant genes for N. crassa NC was designed in which each Cys residue was replaced with a subset of amino acids involved in peptide-metal coordination (Asn, Asp, His, Lys, or Tyr residues). These mutant NC sequences were cloned into the 2 vectors and expressed in E. coli. 1 Mutant protein (containing His residues) showed Cd2+ and Cu+ accumulation (3-fold) from a mixture of 16 heavy metal species. None of the other heavy metals present in the culture medium was accumulated. (35 ref)

L7 ANSWER 7 OF 14 CAPLUS COPYRIGHT 2005 ACS on STN
AN 2001:642867 CAPLUS
DN 136:211468
TI Secretion of mouse-metallothionein by engineered E. coli cells in metal-enriched culture media
AU Cols, Neus; Roepstorff, Kirstine; Gonzalez-Duarte, Roser; Atrian, Silvia
CS Departament de Genetica, Facultat de Biologia, Universitat de Barcelona, Barcelona, 08028, Spain
SO Journal of Molecular Microbiology and Biotechnology (2001), 3(4), 507-512
CODEN: JMMBFF; ISSN: 1464-1801
PB Horizon Scientific Press
DT Journal
LA English
AB Heterologous Escherichia coli expression systems were designed and assayed for the synthesis of functional mouse ***metallothionein*** (MT) as a secreted fusion protein. MT secretion was compared among different systems, and the optimum vector/host/medium combination was tested for ***metal*** ***removal*** . In this case, the Cu content of the medium decreased by up to 34% after growth of recombinant bacteria. The potential use of these genetically-engineered bacteria for water bioremediation is discussed as an alternative to cytoplasmic MT or ***membrane*** -bound MT heterologous expression systems.
RE.CNT 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 8 OF 14 CAPLUS COPYRIGHT 2005 ACS on STN
AN 1982:99022 CAPLUS
DN 96:99022
TI Mechanisms of cadmium absorption in rats
AU Foulkes, E. C.; Johnson, D. R.; Sugawara, N.; Bonewitz, R. F.; Voner, C.
CS Univ. Cincinnati, Cincinnati, OH, USA
SO Report (1981), EPA-600/1-81-063; Order No. PB82-108184, 59 pp. Avail.: NTIS
From: Gov. Rep. Announce. Index (U. S.) 1982, 82(1), 52
DT Report
LA English
AB Expts. on Cd absorption utilized intact segments of rat intestine, perfused of incubated in situ with their blood supply intact. Absorption of Cd from the jejunal lumen can be ascribed to a saturable ***membrane*** system; i.e., after short periods of exposure essentially all the ***metal*** ***removed*** from the lumen was recovered in mucosal tissue (step I). The 2nd step in Cd absorption, i.e., transfer of the metal from mucosa into blood, proceeded at only 1-2% of the rate of uptake from the lumen (step I). No evidence was obtained for a role of ***metallothionein*** in the mucosal retention of Cd. Step I of Cd absorption was inhibited by a variety of exogenous and endogenous factors. Thus Zn depressed Cd transport in an apparently competitive manner. Addn. of milk to the lumen also inhibited Cd uptake, an effect entirely due to the Ca content. Bile salts act as endogenous modulators of Cd absorption; their effect may be related to micelle formation. Ileal Cd absorption differed from that in the jejunum by a relatively much faster step II. Unlike the low ratio of steps II/I for the toxic metal in the jejunum, the ratio for the essential metals Cu and Zn was much higher (.apprx.50%). Absorption of Cd by the gut in neonatal rats proceeded much faster than in adults; reasons for this difference have not yet been clarified. Another question remaining under study is the extent to which different metals such as Cd and Zn share common absorptive mechanisms.

L7 ANSWER 9 OF 14 BIOTECHNO COPYRIGHT 2005 Elsevier Science B.V. on STN
AN 2000:30828517 BIOTECHNO
TI Enhanced bioaccumulation of heavy metals by bacterial cells displaying synthetic phytochelatins
AU Bae W.; Chen W.; Mulchandani A.; Mehra R.K.
CS W. Bae, Dept. of Chem./Environmental Eng., University of California, Riverside, CA 92521, United States.

SO Biotechnology and Bioengineering, (05 DEC 2000), 70/5 (518-524), 36 reference(s)
CODEN: BIBIAU ISSN: 0006-3592
DT Journal; Article
CY United States
LA English
SL English
AB A novel strategy using synthetic phytochelatins is described for the purpose of developing microbial agents for enhanced bioaccumulation of toxic metals. Synthetic genes encoding for several metal-chelating phytochelatin analogs (Glu-Cys)(n) Gly (EC8 (n = 8), EC11 (n = 11), and EC20 (n = 20)) were synthesized, linked to a Ipp-ompA fusion gene, and displayed on the surface of E. coli. For comparison, EC20 was also expressed periplasmically as a fusion with the maltose-binding protein (MBP-EC20). Purified MBP-EC20 was shown to accumulate more Cd.sup.2.sup.+ per peptide than typical mammalian metallothioneins with a stoichiometry of 10 Cd.sup.2.sup.+/ peptide. Cells displaying synthetic phytochelatins exhibited chain-length dependent increase in metal accumulation. For example, 18 nmoles of Cd.sup.2.sup.+/mg dry cells were accumulated by cells displaying EC8, whereas cells exhibiting EC20 accumulated a maximum of 60 nmoles of Cd.sup.2.sup.+/mg dry cells. Moreover, cells with surface-expressed EC20 accumulated twice the amount of Cd.sup.2.sup.+ as cells expressing EC20 periplasmically. The ability to genetically engineer ECs with precisely defined chain length could provide an attractive strategy for developing high-affinity bioadsorbents suitable for heavy ***metal*** ***removal***. (C) 2000 John Wiley and Sons, Inc.

L7 ANSWER 10 OF 14 USPATFULL on STN
AN 2004:334826 USPATFULL
TI Metal binding proteins and associated methods
IN Acey, Roger A., Bellflower, CA, UNITED STATES
Mustillo, Michael, Long Beach, CA, UNITED STATES
Harpham, Brenton G., Thousand Oaks, CA, UNITED STATES
PA MGP Biotechnologies LLC, Irvine, CA (U.S. corporation)
PI US 2004265908 A1 20041230
AI US 2004-797748 A1 20040309 (10)
RLI Division of Ser. No. US 2001-948495, filed on 6 Sep 2001, GRANTED, Pat. No. US 6750056 Division of Ser. No. US 2000-636057, filed on 10 Aug 2000, GRANTED, Pat. No. US 6667151
PRAI US 1999-148526P 19990812 (60)
DT Utility
FS APPLICATION
LREP PRESTON GATES & ELLIS LLP, 1900 MAIN STREET, SUITE 600, IRVINE, CA, 92614-7319
CLMN Number of Claims: 16
ECL Exemplary Claim: CLM-001-6
DRWN 1 Drawing Page(s)
LN.CNT 1332
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Metal binding proteins, associated compositions and methods for their production and use are disclosed. The metal binding proteins include have amino acid sequences analogous to at least one metal binding protein, and conservative amino acid substitutions thereof from a brine shrimp (Artemia). Also provided are the associated nucleic acid sequences encoding metal binding proteins.

L7 ANSWER 11 OF 14 USPATFULL on STN
AN 2003:258639 USPATFULL
TI 207 human secreted proteins
IN Ni, Jian, Germantown, MD, UNITED STATES
Ebner, Reinhard, Gaithersburg, MD, UNITED STATES
LaFleur, David W., Washington, DC, UNITED STATES
Moore, Paul A., Germantown, MD, UNITED STATES
Olsen, Henrik S., Gaithersburg, MD, UNITED STATES
Rosen, Craig A., Laytonsville, MD, UNITED STATES
Ruben, Steven M., Olney, MD, UNITED STATES
Soppet, Daniel R., Centreville, VA, UNITED STATES
Young, Paul E., Gaithersburg, MD, UNITED STATES
Shi, Yanggu, Gaithersburg, MD, UNITED STATES
Florence, Kimberly A., Rockville, MD, UNITED STATES
Wei, Ying-Fei, Berkeley, CA, UNITED STATES
Florence, Charles, Rockville, MD, UNITED STATES
Hu, Jing-Shan, Mountain View, CA, UNITED STATES
Li, Yi, Sunnyvale, CA, UNITED STATES
Kyaw, Hla, Frederick, MD, UNITED STATES
Fischer, Carrie L., Burke, VA, UNITED STATES
Ferrie, Ann M., Painted Post, NY, UNITED STATES
Fan, Ping, Potomac, MD, UNITED STATES
Feng, Ping, Gaithersburg, MD, UNITED STATES
Endress, Gregory A., Florence, MA, UNITED STATES
Dillon, Patrick J., Carlsbad, CA, UNITED STATES
Carter, Kenneth C., North Potomac, MD, UNITED STATES
Brewer, Laurie A., St. Paul, MN, UNITED STATES
Yu, Guo-Liang, Berkeley, CA, UNITED STATES
Zeng, Zhizhen, Lansdale, PA, UNITED STATES
Greene, John M., Gaithersburg, MD, UNITED STATES
PI US 2003181692 A1 20030925
AI US 2001-933767 A1 20010822 (9)
RLI Continuation-in-part of Ser. No. WO 2001-US5614, filed on 21 Feb 2001, PENDING Continuation-in-part of Ser. No. US 1998-205258, filed on 4 Dec 1998, PENDING
PRAI US 2000-184836P 20000224 (60)
US 2000-193170P 20000329 (60)
US 1997-48885P 19970606 (60)
US 1997-49375P 19970606 (60)
US 1997-48881P 19970606 (60)
US 1997-48880P 19970606 (60)
US 1997-48896P 19970606 (60)
US 1997-49020P 19970606 (60)
US 1997-48876P 19970606 (60)
US 1997-48895P 19970606 (60)
US 1997-48884P 19970606 (60)
US 1997-48894P 19970606 (60)
US 1997-48971P 19970606 (60)
US 1997-48964P 19970606 (60)
US 1997-48882P 19970606 (60)
US 1997-48899P 19970606 (60)
US 1997-48893P 19970606 (60)
US 1997-48900P 19970606 (60)
US 1997-48901P 19970606 (60)
US 1997-48892P 19970606 (60)
US 1997-48915P 19970606 (60)
US 1997-49019P 19970606 (60)

```
US 1997-48970P      19970606 (60)
US 1997-48972P      19970606 (60)
US 1997-48916P      19970606 (60)
US 1997-49373P      19970606 (60)
US 1997-48875P      19970606 (60)
US 1997-49374P      19970606 (60)
US 1997-48917P      19970606 (60)
US 1997-48949P      19970606 (60)
US 1997-48974P      19970606 (60)
US 1997-48883P      19970606 (60)
US 1997-48897P      19970606 (60)
US 1997-48898P      19970606 (60)
US 1997-48962P      19970606 (60)
US 1997-48963P      19970606 (60)
US 1997-48877P      19970606 (60)
US 1997-48878P      19970606 (60)
US 1997-57645P      19970905 (60)
US 1997-57642P      19970905 (60)
US 1997-57668P      19970905 (60)
US 1997-57635P      19970905 (60)
US 1997-57627P      19970905 (60)
US 1997-57667P      19970905 (60)
US 1997-57666P      19970905 (60)
US 1997-57764P      19970905 (60)
US 1997-57643P      19970905 (60)
US 1997-57769P      19970905 (60)
US 1997-57763P      19970905 (60)
US 1997-57650P      19970905 (60)
US 1997-57584P      19970905 (60)
US 1997-57647P      19970905 (60)
US 1997-57661P      19970905 (60)
US 1997-57662P      19970905 (60)
US 1997-57646P      19970905 (60)
US 1997-57654P      19970905 (60)
US 1997-57651P      19970905 (60)
US 1997-57644P      19970905 (60)
US 1997-57765P      19970905 (60)
US 1997-57762P      19970905 (60)
US 1997-57775P      19970905 (60)
US 1997-57648P      19970905 (60)
US 1997-57774P      19970905 (60)
US 1997-57649P      19970905 (60)
US 1997-57770P      19970905 (60)
US 1997-57771P      19970905 (60)
US 1997-57761P      19970905 (60)
US 1997-57760P      19970905 (60)
US 1997-57776P      19970905 (60)
US 1997-57778P      19970905 (60)
US 1997-57629P      19970905 (60)
US 1997-57628P      19970905 (60)
US 1997-57777P      19970905 (60)
US 1997-57634P      19970905 (60)
US 1997-70923P      19971218 (60)
US 1998-92921P      19980715 (60)
US 1998-94657P      19980730 (60)
US 1997-70923P      19971218 (60)
US 1998-92921P      19980715 (60)
       US 1998-94657P      19980730 (60)
DT     Utility
FS     APPLICATION
LREP   HUMAN GENOME SCIENCES INC, 9410 KEY WEST AVENUE, ROCKVILLE, MD, 20850
CLMN   Number of Claims: 23
ECL    Exemplary Claim: 1
DRWN   10 Drawing Page(s)
LN.CNT 32746
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB     The present invention relates to novel human secreted proteins and
       isolated nucleic acids containing the coding regions of the genes
       encoding such proteins. Also provided are vectors, host cells,
       antibodies, and recombinant methods for producing human secreted
       proteins. The invention further relates to diagnostic and therapeutic
       methods useful for diagnosing and treating diseases, disorders, and/or
       conditions related to these novel human secreted proteins.

L7   ANSWER 12 OF 14  USPATFULL on STN
AN     2003:153636  USPATFULL
TI     Metal binding proteins and associated methods
IN     Acey, Roger A., Bellflower, CA, UNITED STATES
       Mustillo, Michael, Long Beach, CA, UNITED STATES
       Harpham, Brenton G., Thousand Oaks, CA, UNITED STATES
PI     US 2003105304      A1   20030605
       US 6750056         B2   20040615
AI     US 2001-948495     A1   20010906 (9)
DT     Utility
FS     APPLICATION
LREP   Attn: Charles Berman, OPPENHEIMER WOLFF & DONNELLY LLP, 840 Newport
       Center Dr., Suite 700, Newport Beach, CA, 92660
CLMN   Number of Claims: 19
ECL    Exemplary Claim: 1
DRWN   1 Drawing Page(s)
LN.CNT 1365
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB     Metal binding proteins, associated compositions and methods for their
       production and use are disclosed. The metal binding proteins include
       have amino acid sequences analogous to at least one metal binding
       protein, and conservative amino acid substitutions thereof from a brine
       shrimp (Artemia). Also provided are the associated nucleic acid
       sequences encoding metal binding proteins.

L7    ANSWER 13 OF 14  WATER  COPYRIGHT 2005 CSA on STN
AN    2004256892  WATER
DN    9304456
TI    Stimulation of Biological Uptake of Heavy Metals
AU    Ghosh, S; Bupp, S
SO    Water Science and Technology WSTED4, Vol. 26, p 227-236, No. 1-2, 1992. 2
      fig, 4 tab, 27 ref. EPA Agreement No. R-815709 to the Univ. of Utah.
AB    Conventional chemical treatment methods, which include
      precipitation/filtration, ion exchange, oxidation/reduction,
      electrochemical recovery,   ***membrane***   separation, and other
      techniques, may be ineffective or uneconomical when the heavy-metal
      concentrations in the polluted environment are in the range of 10-100
      mg/L and the permissible concentrations are less than 1 mg/L. An
      alternative method involving microbial uptake of heavy metals could be
      much more economical than chemical treatment. The relative capabilities
```

of unacclimated, acclimated, and cysteine-cystine-stimulated aerobic cultures to remove heavy metals, was investigated. Loss of organism viability was observed at metal concentrations >30 mg/L, however, loss of cell viability did not affect metal uptake. Metal-complexing capacities from 0.041 to 2.13 mg/mg protein were observed. ***Metal*** ***removal*** from binary and ternary mixtures exceeded those of single metals. Surprisingly, culture acclimation resulted in reduced metal uptake. However, a cysteine-cystine-stimulated culture had substantially increased ***metal*** - ***removal*** capabilities possibly due to the synthesis of ***metallothionein*** -like proteins. Biopolymers of the unacclimated organisms had an affinity for metal binding of the order: Cu>Pb >Cd. This research points to the feasibility of in vitro detoxification of high metal-content hazardous wastes by cell materials derived from cysteine-cystine-stimulated chemostat cultures. Coupling in vitro metal complexation with metal leaching from biosolids could provide an opportunity for recycling hazardous heavy metals. (See also W93-04432) (Author's abstract)

L7 ANSWER 14 OF 14 DISSABS COPYRIGHT (C) 2005 ProQuest Information and Learning Company; All Rights Reserved on STN
AN 2003:9455 DISSABS Order Number: AAINQ68069
TI Heavy ***metal*** ***removal*** using modified sol-gels derived powder matrices containing crude ***metallothionein*** extracts from Schizosaccharomyces pombe
AU Bahrami, Shirin [Ph.D.]; Bassi, Amarjeet [adviser]
CS The University of Western Ontario (Canada) (0784)
SO Dissertation Abstracts International, (2002) Vol. 63, No. 5B, p. 2521.
Order No.: AAINQ68069. 208 pages.
ISBN: 0-612-68069-X.
DT Dissertation
FS DAI
LA English
AB In this study modified sol-gels derived matrices containing polymers or crude ***metallothionein*** (MT) extracts were applied for the first time to remove cadmium, zinc and copper from aqueous solutions. First a simple protocol was established for the preparation of crude MT extracts from Schizosaccharomyces pombe. Next the crude MT extracts or other non-biological chelating agents were entrapped in sol-gel derived powders of varying particle sizes. The adsorption capacity of these metals on MT-sol-gel derived powder was high. The adsorption was also rapid on 45 to 75 .mu.m powders containing MT. The adsorption capacity of sol-gel derived powder (45 to 75 .mu.m) containing crude MT extracts was found to be 621.9 mg of cadmium/g of MT-sol-gel derived matrices compared to 117.12 mg of cadmium/g of PEI (Polyethyleneimine). The sol-gel derived powder containing MT also effectively removed cadmium in presence of zinc and copper. Recovery of metals sol-gel derived matrices using a solution of 1 M NaCl resulted in 90% of metals removal.

The general-purpose adsorption isotherms such as Langmuir, Langmuir-Freundlich, Redlich-Peterson and Toth compared for the goodness of fit to the sorption data of cadmium, zinc and copper on both biopolymer and commercial polymers. The data showed a good fit on Langmuir isotherm. The kinetic modeling of ***metal*** ***removal*** using modified sol-gels was also carried out.

A small column containing sol-gel derived powder (45 to 75 .mu.m) ***filter*** was designed, built and applied as a prototype ***device*** for investigation of Cd removal from aqueous solutions. The column was found to effectively remove of Cd from aqueous solutions. The MT containing sol-gels derived matrices represents an excellent and potentially inexpensive method for the large scale removal of heavy metals from the environment.

=> d his

(FILE 'HOME' ENTERED AT 12:47:43 ON 14 APR 2005)

FILE 'STNGUIDE' ENTERED AT 12:47:55 ON 14 APR 2005

FILE 'HOME' ENTERED AT 12:47:59 ON 14 APR 2005

INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, ANTE, AQUALINE, AQUASCI, BIOBUSINESS, BIOCOMMERCE, BIOENG, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA, CANCERLIT, CAPLUS, CEABA-VTB, CEN, CIN, CONFSCI, CROPB, CROPU, DDFB, DDFU, DGENE, DISSABS, ...' ENTERED AT 12:48:10 ON 14 APR 2005
SEA METAL (W) (REMOV? OR REMEDIATION OR RECOVER?)

89	FILE AGRICOLA
40	FILE ANABSTR
143	FILE ANTE
440	FILE AQUALINE
134	FILE AQUASCI
178	FILE BIOBUSINESS
26	FILE BIOCOMMERCE
255	FILE BIOENG
936	FILE BIOSIS
1978	FILE BIOTECHABS
1978	FILE BIOTECHDS
662	FILE BIOTECHNO
334	FILE CABA
3	FILE CANCERLIT
19959	FILE CAPLUS
2835	FILE CEABA-VTB
6	FILE CEN
427	FILE CIN
116	FILE CONFSCI
1	FILE CROPB
1	FILE CROPU
121	FILE DGENE
188	FILE DISSABS
6	FILE EMBAL
1042	FILE EMBASE
431	FILE ESBIOBASE
72	FILE FEDRIP
13	FILE FROSTI
40	FILE FSTA
2	FILE GENBANK
38	FILE HEALSAFE
1311	FILE IFIPAT
270	FILE JICST-EPLUS
200	FILE LIFESCI
283	FILE MEDLINE

```
       23   FILE NIOSHTIC
      447   FILE NTIS
       17   FILE OCEAN
      966   FILE PASCAL
     1854   FILE PROMT
       23   FILE RDISCLOSURE
     1515   FILE SCISEARCH
     8056   FILE TOXCENTER
     6590   FILE USPATFULL
      388   FILE USPAT2
      546   FILE WATER
     3439   FILE WPIDS
        7   FILE WPIFV
     3439   FILE WPINDEX
L1         QUE METAL (W) (REMOV? OR REMEDIATION OR RECOVER?)
           ---------
           SEA L1 (P) METALLOTHIONEIN
           ---------
       0*   FILE ADISNEWS
       1    FILE AGRICOLA
       0*   FILE ANTE
       2*   FILE AQUALINE
       1    FILE AQUASCI
       1    FILE BIOBUSINESS
       0*   FILE BIOCOMMERCE
       5*   FILE BIOENG
       7    FILE BIOSIS
      50*   FILE BIOTECHABS
      50*   FILE BIOTECHDS
       9*   FILE BIOTECHNO
       2    FILE CABA
      21    FILE CAPLUS
       9*   FILE CEABA-VTB
       0*   FILE CIN
      37    FILE DGENE
       1    FILE DISSABS
       7    FILE EMBASE
       3*   FILE ESBIOBASE
       0*   FILE FEDRIP
       0*   FILE FOMAD
       0*   FILE FOREGE
       0*   FILE FROSTI
       0*   FILE FSTA
       1    FILE IFIPAT
       0*   FILE KOSMET
       5    FILE LIFESCI
       0*   FILE MEDICONF
       7    FILE MEDLINE
       1    FILE NIOSHTIC
       4*   FILE NTIS
       0*   FILE NUTRACEUT
       6*   FILE PASCAL
       0*   FILE PHARMAML
       9    FILE SCISEARCH
      21    FILE TOXCENTER
       4    FILE USPATFULL
       1    FILE USPAT2
       2*   FILE WATER
L2         QUE L1 (P) METALLOTHIONEIN
           ---------
           SEA L2 (P) ((BRINE (W) SHRIMP) OR ARTEMIA)
           ---------
       0*   FILE ADISNEWS
       0*   FILE ANTE
       0*   FILE AQUALINE
       0*   FILE BIOCOMMERCE
       0*   FILE BIOENG
       0*   FILE BIOTECHABS
       0*   FILE BIOTECHDS
       0*   FILE BIOTECHNO
       0*   FILE CEABA-VTB
       0*   FILE CIN
      10    FILE DGENE
       0*   FILE ESBIOBASE
       0*   FILE FEDRIP
       0*   FILE FOMAD
       0*   FILE FOREGE
       0*   FILE FROSTI
       0*   FILE FSTA
       0*   FILE KOSMET
       0*   FILE MEDICONF
       0*   FILE NTIS
       0*   FILE NUTRACEUT
       0*   FILE PASCAL
       0*   FILE PHARMAML
       0*   FILE WATER
L3         QUE L2 (P) ((BRINE (W) SHRIMP) OR ARTEMIA)
           ---------
           SEA L2
           ---------
       0*   FILE ADISNEWS
       1    FILE AGRICOLA
       0*   FILE ANTE
       2*   FILE AQUALINE
       1    FILE AQUASCI
       1    FILE BIOBUSINESS
       0*   FILE BIOCOMMERCE
       5*   FILE BIOENG
       7    FILE BIOSIS
      50*   FILE BIOTECHABS
      50*   FILE BIOTECHDS
       9*   FILE BIOTECHNO
       2    FILE CABA
      21    FILE CAPLUS
       9*   FILE CEABA-VTB
       0*   FILE CIN
      37    FILE DGENE
       1    FILE DISSABS
       7    FILE EMBASE
       3*   FILE ESBIOBASE
       0*   FILE FEDRIP
       0*   FILE FOMAD
       0*   FILE FOREGE
       0*   FILE FROSTI
```

```
                0*  FILE FSTA
                1   FILE IFIPAT
                0*  FILE KOSMET
                5   FILE LIFESCI
                0*  FILE MEDICONF
                7   FILE MEDLINE
                1   FILE NIOSHTIC
                4*  FILE NTIS
                0*  FILE NUTRACEUT
                6*  FILE PASCAL
                0*  FILE PHARMAML
                9   FILE SCISEARCH
               21   FILE TOXCENTER
                4   FILE USPATFULL
                1   FILE USPAT2
                2*  FILE WATER
L4               QUE L2
                ---------

     FILE 'BIOTECHDS, DGENE, CAPLUS, TOXCENTER, SCISEARCH, BIOTECHNO,
     CEABA-VTB, BIOSIS, EMBASE, MEDLINE, PASCAL, LIFESCI, BIOENG, USPATFULL,
     NTIS, ESBIOBASE, CABA, AQUALINE, WATER, AGRICOLA, AQUASCI, BIOBUSINESS,
     DISSABS, IFIPAT, NIOSHTIC, USPAT2' ENTERED AT 12:53:22 ON 14 APR 2005
L5           217 S L4
L6           128 DUP REM L5 (89 DUPLICATES REMOVED)
L7            14 S L6 AND (DEVICE OR MEMBRANE OR FILTER)

=> log h
COST IN U.S. DOLLARS                              SINCE FILE     TOTAL
                                                       ENTRY   SESSION
FULL ESTIMATED COST                                    76.60     82.39

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)        SINCE FILE     TOTAL
                                                       ENTRY   SESSION
CA SUBSCRIBER PRICE                                    -1.46     -1.46

 SESSION WILL BE HELD FOR 60 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 12:55:59 ON 14 APR 2005

Connecting via Winsock to STN



Welcome to STN International!  Enter x:X

LOGINID:SSSPTA1653RAW

PASSWORD:
TERMINAL (ENTER 1, 2, 3, OR ?):2

* * * * * * * * * *   Welcome to STN International   * * * * * * * * * *

 NEWS  1          Web Page URLs for STN Seminar Schedule - N. America
 NEWS  2          "Ask CAS" for self-help around the clock
 NEWS  3  FEB 25  CA/CAPLUS - Russian Agency for Patents and Trademarks
                  (ROSPATENT) added to list of core patent offices covered
 NEWS  4  FEB 28  PATDPAFULL - New display fields provide for legal status
                  data from INPADOC
 NEWS  5  FEB 28  BABS - Current-awareness alerts (SDIs) available
 NEWS  6  FEB 28  MEDLINE/LMEDLINE reloaded
 NEWS  7  MAR 02  GBFULL: New full-text patent database on STN
 NEWS  8  MAR 03  REGISTRY/ZREGISTRY - Sequence annotations enhanced
 NEWS  9  MAR 03  MEDLINE file segment of TOXCENTER reloaded
 NEWS 10  MAR 22  KOREAPAT now updated monthly; patent information enhanced
 NEWS 11  MAR 22  Original IDE display format returns to REGISTRY/ZREGISTRY
 NEWS 12  MAR 22  PATDPASPC - New patent database available
 NEWS 13  MAR 22  REGISTRY/ZREGISTRY enhanced with experimental property tags
 NEWS 14  APR 04  EPFULL enhanced with additional patent information and new
                  fields
 NEWS 15  APR 04  EMBASE - Database reloaded and enhanced

 NEWS EXPRESS  JANUARY 10 CURRENT WINDOWS VERSION IS V7.01a, CURRENT
               MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
               AND CURRENT DISCOVER FILE IS DATED 10 JANUARY 2005

 NEWS HOURS    STN Operating Hours Plus Help Desk Availability
 NEWS INTER    General Internet Information
 NEWS LOGIN    Welcome Banner and News Items
 NEWS PHONE    Direct Dial and Telecommunication Network Access to STN
 NEWS WWW      CAS World Wide Web Site (general information)

Enter NEWS followed by the item number or name to see news on that
specific topic.

  All use of STN is subject to the provisions of the STN Customer
  agreement.  Please note that this agreement limits use to scientific
  research.  Use for software development or design or implementation
  of commercial gateways or other similar uses is prohibited and may
  result in loss of user privileges and other penalties.

  * * * * * * * * * * * * * STN Columbus * * * * * * * * * * * * * * *

FILE 'HOME' ENTERED AT 15:07:47 ON 14 APR 2005

=> metallothionein and artemia
METALLOTHIONEIN IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> file biosis
COST IN U.S. DOLLARS                              SINCE FILE     TOTAL
                                                       ENTRY   SESSION
FULL ESTIMATED COST                                     0.84      0.84

FILE 'BIOSIS' ENTERED AT 15:10:22 ON 14 APR 2005
Copyright (c) 2005 The Thomson Corporation

FILE COVERS 1969 TO DATE.
CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
FROM JANUARY 1969 TO DATE.
```

```
RECORDS LAST ADDED: 13 April 2005 (20050413/ED)

FILE RELOADED: 19 October 2003.

=> s metallothionein and artemia
        8469 METALLOTHIONEIN
        4298 ARTEMIA
L1         6 METALLOTHIONEIN AND ARTEMIA

=> dup rem l1
PROCESSING COMPLETED FOR L1
L2          6 DUP REM L1 (0 DUPLICATES REMOVED)

=> d l2 bib ab 1-6

L2   ANSWER 1 OF 6  BIOSIS  COPYRIGHT (c) 2005 The Thomson Corporation  on STN
AN   2000:213585  BIOSIS
DN   PREV200000213585
TI   Alterations in prey capture and induction of metallothioneins in grass
     shrimp fed cadmium-contaminated prey.
AU   Wallace, William G. [Reprint author]; Hoexum Brouwer, Thea M.; Brouwer,
     Marius; Lopez, Glenn R.
CS   Center for Environmental Science, College of Staten Island, City
     University of New York, 2800 Victory Boulevard, 6S-310, Staten Island, NY,
     10314, USA
SO   Environmental Toxicology and Chemistry, (April, 2000) Vol. 19, No. 4, pp.
     962-971. print.
     CODEN: ETOCDK. ISSN: 0730-7268.
DT   Article
LA   English
ED   Entered STN: 24 May 2000
     Last Updated on STN: 5 Jan 2002
AB   The aquatic oligochaete Limnodrilus hoffmeisteri from a Cd-contaminated
     cove on the Hudson River, Foundry Cove, New York, USA, has evolved Cd
     resistance.  Past studies have focused on how the mode of detoxification
     of Cd by these Cd-resistant worms influences Cd trophic transfer to the
     grass shrimp Palaemonetes pugio.  In the present study, we investigate
     reductions in prey capture in grass shrimp fed Cd-contaminated prey.  We
     also investigate the induction of metal-binding proteins,
     metallothioneins, in these Cd-exposed shrimp.  Grass shrimp were fed
     field-exposed Cd-contaminated Foundry Cove oligochaetes (for 1 week) or
     laboratory-exposed Cd-contaminated   ***Artemia***   salina (for 1 or 2
     weeks).  Following these exposures, the ability of Cd-dosed and control
     shrimp to capture live A. salina was compared.  Results show that shrimp
     fed laboratory-exposed Cd-contaminated A. salina for 2 weeks exhibit
     significant reductions in their ability to successfully capture prey (live
     A. salina).  Reductions in prey capture were also apparent, though not as
     dramatic in shrimp fed for 1 week on field-exposed Cd-contaminated Foundry
     Cove oligochaetes.  Shrimp were further investigated for their subcellular
     distribution of Cd to examine if alterations in prey capture could be
     linked to saturation of Cd-  ***metallothionein***  .  Cd-dosed shrimp
     produced a low molecular weight (apprx10.000 daltons) Cd-binding
       ***metallothionein***   protein in a dose- and time-dependent manner.
     Most importantly, successful prey capture decreased with increased Cd body
     burdens and increased Cd concentration bound to high molecular weight
     proteins (i.e., enzymes).

L2   ANSWER 2 OF 6  BIOSIS  COPYRIGHT (c) 2005 The Thomson Corporation  on STN
AN   1999:164755  BIOSIS
DN   PREV199900164755
TI   Effect of cadmium exposure on zinc levels in the brine shrimp
       ***Artemia***   parthenogenetica.
AU   Martinez, Manuela [Reprint author]; Del Ramo, Jose; Torreblanca, Amparo;
     Diaz-Mayans, Javier
CS   Lab. Anim. Physiol., Dep. Anim. Biol., Fac. Biol. Sci., Univ. Valencia,
     Dr. Moliner 50, 46100 Burjassot, Valencia, Spain
SO   Aquaculture, (March 15, 1999) Vol. 172, No. 3-4, pp. 315-325. print.
     CODEN: AQCLAL. ISSN: 0044-8486.
DT   Article
LA   English
ED   Entered STN: 16 Apr 1999
     Last Updated on STN: 16 Apr 1999
AB   Zinc and cadmium have been reported as metabolic antagonists, such that
     high zinc intake afford animals some protection against the potentially
     toxic effects of cadmium exposure.  There is considerable evidence to
     support a role of metallothioneins (MTs) in regulating or controlling the
     intracellular availability of essential metals and the non-essential
     metal.  The effect of 24-h cadmium pre-exposure (10 mg Cd/l) on zinc
     concentrations in the brine shrimp   ***Artemia***   parthenogenetica
     exposed to zinc (5 mg Zn/l) was studied.  The zinc content of shrimps was
     not altered by cadmium.  The homeostatic mechanism for zinc regulation
     appears not to be disturbed by cadmium exposure in shrimps kept in
     naturally occurring zinc concentrations.  When zinc was added to the water
     after cadmium exposure. the zinc concentrations attained by cadmium
     treated animals were lower than that of the non-exposed to cadmium.  No
     effect of zinc exposure oil cadmium elimination was observed.  In order to
     investigate the potential role of metillothionein in this effect,
       ***metallothionein***   levels were measured and protein bound zinc and
     cadmium were studied.  A clear relationship between cadmium/zinc
     interactions with   ***metallothionein***   content or metal bound to this
     protein was not evident.

L2   ANSWER 3 OF 6  BIOSIS  COPYRIGHT (c) 2005 The Thomson Corporation  on STN
AN   1995:289119  BIOSIS
DN   PREV199598303419
TI   Quantification of cadmium-induced   ***metallothionein***   in crustaceans
     by the silver-saturation method.
AU   Del Ramo, J. [Reprint author]; Torreblanca, A. [Reprint author]; Martinez,
     M. [Reprint author]; Pastor, A.; Diaz-Mayans, J. [Reprint author]
CS   Lab. Animal Physiology, Dep. Animal Biology, Faculty Biological Sciences,
     Univ. Valencia, Dr. Moliner 50, 46100-Burjassot, Valencia, Spain
SO   Marine Environmental Research, (1995) Vol. 39, No. 1-4, pp. 121-125.
     Meeting Info.: Seventh International Symposium on Responses of Marine
     Organisms to Pollutants (PRIMO 7). Goteborg, Sweden. April 20-22, 1993.
     CODEN: MERSDW. ISSN: 0141-1136.
DT   Conference; (Meeting)
     Conference; (Meeting Paper)
LA   English
ED   Entered STN: 5 Jul 1995
     Last Updated on STN: 5 Jul 1995

L2   ANSWER 4 OF 6  BIOSIS  COPYRIGHT (c) 2005 The Thomson Corporation  on STN
AN   1995:52011  BIOSIS
DN   PREV199598066311
```

```
TI   Purification of   ***metallothionein***  -like metal binding proteins from
       ***Artemia***  .
AU   Brook, J. L.; Harpham, B. G.; Acey, R. A.
CS   Dep. Chem. Biochem., Calif. State Univ., Long Beach, CA 90840, USA
SO   Molecular Biology of the Cell, (1994) Vol. 5, No. SUPPL., pp. 226A.
     Meeting Info.: Thirty-fourth Annual Meeting of the American Society for
     Cell Biology. San Francisco, California, USA. December 10-14, 1994.
     CODEN: MBCEEV. ISSN: 1059-1524.
DT   Article
     Conference; (Meeting)
     Conference; Abstract; (Meeting Abstract)
     Conference; (Meeting Poster)
LA   English
ED   Entered STN: 31 Jan 1995
     Last Updated on STN: 31 Jan 1995

L2   ANSWER 5 OF 6  BIOSIS  COPYRIGHT (c) 2005 The Thomson Corporation  on STN
AN   1990:460603  BIOSIS
DN   PREV199039095964; BR39:95964
TI   DISRUPTION OF   ***ARTEMIA***   DEVELOPMENT BY METALS.
AU   PANDEY A S [Reprint author]; BRECKENRIDGE J E; MACRAE T H
CS   DEP BIOL, DALHOUSIE UNIV, HALIFAX, NOVA SCOTIA B3H 4J1, CAN
SO   NATO ASI Series Series A Life Sciences, (1989) pp. 57-58. WARNER, A. H.,
     T. H. MACRAE AND J. C. BAGSHAW (ED.). NATO ASI (ADVANCED SCIENCE
     INSTITUTES) SERIES SERIES A: LIFE SCIENCES, VOL. 174. CELL AND MOLECULAR
     BIOLOGY OF ARTEMIA DEVELOPMENT; WORKSHOP, MONTREAL, QUEBEC, CANADA, AUGUST
     11-13, 1988. X+453P. PLENUM PUBLISHING CORPORATION: NEW YORK, NEW YORK,
     USA; LONDON, ENGLAND, UK. ILLUS.
     Publisher: Series: NATO ASI Series Series A Life Sciences.
     ISSN: 0258-1213. ISBN: 0-306-43248-X.
DT   Book
     Conference; (Meeting)
FS   BR
LA   ENGLISH
ED   Entered STN: 13 Oct 1990
     Last Updated on STN: 13 Oct 1990

L2   ANSWER 6 OF 6  BIOSIS  COPYRIGHT (c) 2005 The Thomson Corporation  on STN
AN   1985:151216  BIOSIS
DN   PREV198529041212; BR29:41212
TI   CADMIUM BINDING PROTEINS IN DEVELOPING   ***ARTEMIA***  .
AU   THALL A [Reprint author]; ACEY R
CS   DEP CHEM, CALIFORNIA STATE UNIV-LONG BEACH, LONG BEACH, CALIF 90840, USA
SO   Federation Proceedings, (1985) Vol. 44, No. 5, pp. 1461.
     Meeting Info.: 69TH ANNUAL MEETING OF THE FEDERATION OF AMERICAN SOCIETIES
     FOR EXPERIMENTAL BIOLOGY, ANAHEIM, CALIF., USA, APR. 21-26, 1985. FED
     PROC.
     CODEN: FEPRA7. ISSN: 0014-9446.
DT   Conference; (Meeting)
FS   BR
LA   ENGLISH

=> log h
COST IN U.S. DOLLARS                              SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                    11.85      12.69

SESSION WILL BE HELD FOR 60 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 15:11:03 ON 14 APR 2005
```